Space Weather Forecast

Issued on Tuesday, 06 February 2024 at 01:21 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate flares expected, with a chance of Strong flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Moderate, with two Moderate class flares observed both from the large sunspot region in the southeast. There are thirteen sunspot regions however a number of these are small and either stable or fading with only two of particular note. This includes the large and active region on the southeast disc, with a complex but ragged main spot which includes some complex magnetic fields including close proximity opposite polarities. The other region is a less active region in the southwest disc, which is becoming hard to assess due to both its southern and western location, however this consists of two close proximity opposite magnetic polarity spots, leading to an unstable configuration.

No Earth-directed coronal mass ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: Solar winds were indicative of the onset of a weak fast wind from a coronal hole. Initially near background, at around 400 km/s, these rose from 05/1500 UTC to become slightly elevated at just under 500km/s. Interplanetary Magnetic field (IMF) was initially weak but gradually rose to be moderate. The north-south component also became moderate at times, and was mainly positive (northward) with brief negative rotations (southward). Geomagnetic activity was Quiet (Kp0-2).

Energetic Particles / Solar Radiation: The count rate of energetic particles is at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity expected, with further Moderate flares and a chance of Strong flares-flares. These most likely from either the region in the southeast, or from the smaller region in the southwest. This risk decreases slightly day 3 onward as the southwest spot recedes on the far-side.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Current coronal hole sourced fast winds are expected to gradually ease days 1-2 (06-07 Feb), with slightly elevated speeds easing to background. No other enhancements forecast. Geomagnetic activity is expected to be mostly Quiet with a chance of Unsettled intervals, mainly days 1-2 (06-07 Feb).

Energetic Particles / Solar Radiation: The count rate of energetic particles has a chance of rising above background in response to any large flares that may occur. This will bring a slight chance of reaching the S1 Minor Solar Radiation Storms level.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	1	1	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	80	80	70	60
Very Active	R3 to R5 X	No	30	30	20	15

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	20	20	20	20
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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